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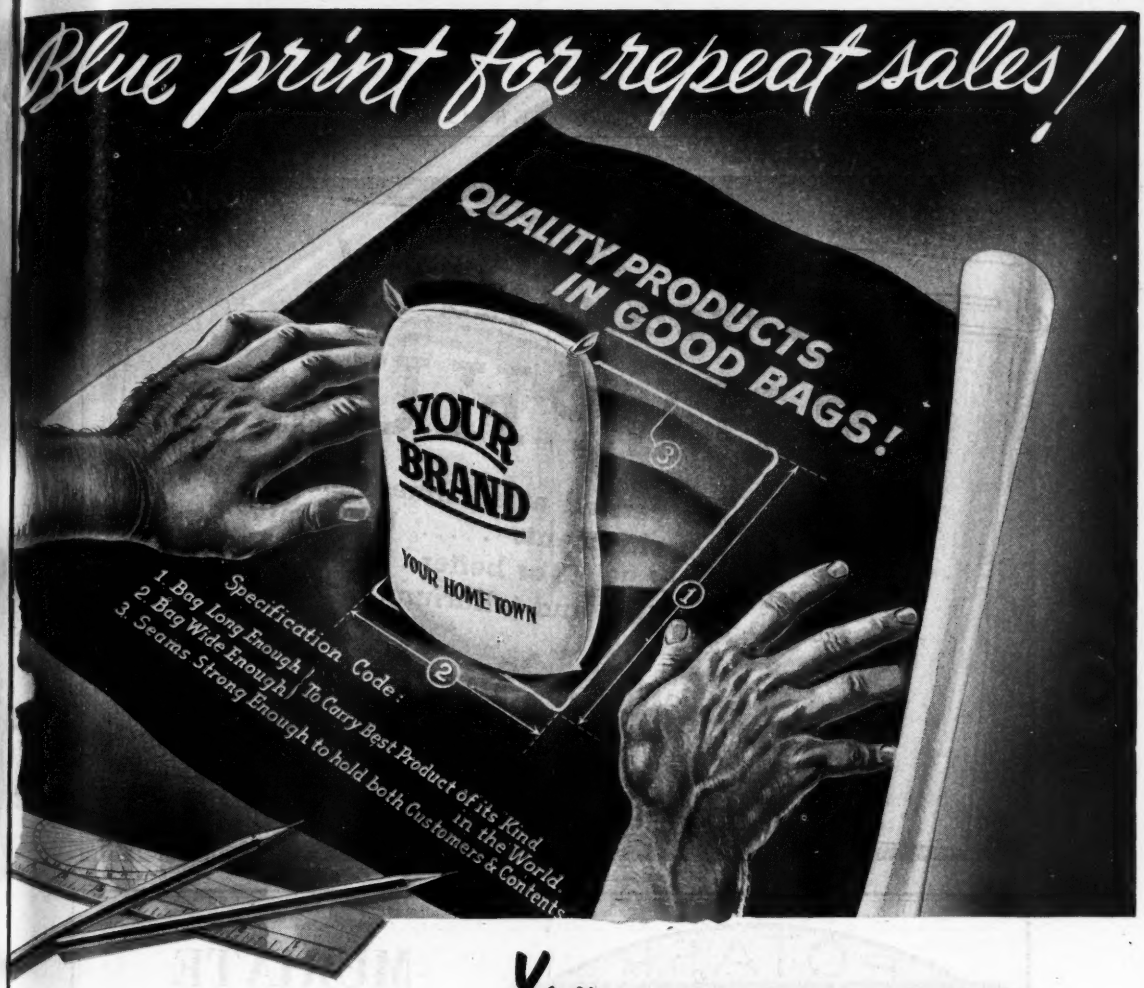

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...THE...

AMERICAN FERTILIZER

"That man is a benefactor to his race who makes two blades of grass to grow where but one grew before."

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The Soil Puts Its Mark on Mankind

By FIRMAN E. BEAR

WHEN Columbus discovered America, a squirrel could have gone from New York to New Orleans without touching the earth, leaping from one great forest tree to another. Except for the prairies of Illinois, almost the entire land area east of the Mississippi River was heavily wooded. What is now the United States of America was then inhabited by some 800,000 Indians. Although each Indian had 2,400 acres of land at his disposal, neither peace nor plenty prevailed, the several tribes being in constant warfare because of shortages of food. Then the soil of this country was incapable of supporting even one million people, whereas now it not only feeds and clothes 135 millions of us but provides a large surplus for export to our friends across the seas.

A Million More Mouths Yearly

Our population has been increasing at a rate of about one per cent a year. To feed these ever-growing millions of human beings has called for an ever-increasing intensity of agricultural production. Vast areas of forest had to be cleared off and put to the plow. The corn patches of the Indian squaws grew into large corn fields that now cover an area equal to that of the entire States of New York, Pennsylvania, New Jersey, Delaware, Maryland, and Virginia. An equally large acreage of land is now being planted to wheat, oats, and rye. Many million more acres are being employed in the production of hay, cotton, sorghums, soybeans, flax, potatoes, beans, rice, tobacco, vegetables, and canning crops. The present soybean acreage in the United States would more than cover the entire State of New Jersey.

Tractors Make No Manure

With the advent of the automobile and the tractor the need for horse-feed has been largely eliminated so that many hay fields have been plowed up and put into cultivated crops. Over 140 million acres of land are being torn up every spring and kept clean all summer long. Improvement in plowing and cultivating machinery and the development of hybrid seed have made it possible to draw bigger drafts against the natural mineral supplies in the soil. Marketable feeds and foods are being made out of even the crop wastes on many farms, less and less plant refuse being returned to the land.

In proportion as larger crops and more crop wastes have been harvested and hauled off the farm, the rate of removal of the elements essential to plant growth has been speeded up. Even in the early days of our agriculture the available supplies of some of the "major" elements has become so low along the eastern seaboard that they had to be renewed regularly, otherwise acre yields fell off. Now, however, the problem has become more complicated because of deficiencies of the "minor" elements as well.

Heavy Rains Leach Land

One would have thought from the appearance of the mighty forests our forefathers found in this part of the country that the soil beneath our feet was naturally rich in all the elements plants and animals require. But the facts are quite the contrary. Luxuriant forests grow only in regions of abundant rainfall, and the heavy rains of the centuries had so leached the forest land of this country that little of immediate value remained except the mineral elements that were contained in the

trees themselves and in the decaying leaves and branches that had accumulated underneath. Thus the forest soil had come to be made up mostly of silicon, aluminum, and iron in secondary silicate or oxide form. Except for the few ounces of iron per acre of crop that are required for chlorophyll production, these elements serve mostly to provide standing room for plants and adsorbents for the fertilizers with which they are being fed.

Deserts Need No Fertilizers

If one travels westward beyond the Mississippi River to the great Blackland Belt, extending across the United States from the Dakotas to Texas by way of Nebraska, Kansas, and Oklahoma, he will find, on digging down into the soil, that it is underlain with a deposit of calcium carbonate. Still farther west, in the desert, the calcium and other elements of fertility are found in great abundance right on top of the ground. Apply water to these lands and crops flourish. No manure, lime, fertilizer, or anything else is required to make the desert bloom. The farther east and south one goes in the United States, however, the heavier the rainfall and the more seriously the soils have been leached. This means that greater numbers and larger amounts of the elements must be added to these rain-washed soils than to those farther west. In New Jersey, for example, farmers now apply nearly 1,000 pounds of soil amendments annually for every acre of cropped land, whereas in Idaho, the State that is noted for its big potatoes, the yearly rate of application is less than 10 pounds per acre.

Recently we had occasion to examine into the lime-requirements of 20 of New Jersey's most important soils. Most of the samples were obtained from virgin areas that had never been farmed. Each soil was sampled, layer by layer, to whatever depth was necessary to get to the bottom of its subsoil and down into the rock or unconsolidated material beneath. Of these 20 soils, 13 were found to be strongly acid all the way down, indicating that most of their original lime had been carried away by the drainage water. Only those soils that had been formed from limestone or calcareous shales contained adequate amounts of lime, and most of this was down in the subsoil rather than up near the surface where it is needed most.

Sea Salts Returned to Soil

The ocean is the depository for the substances that are leached out of the rocks, and out of the soils that are made from them. Enormous deposits of calcite, apatite, and glauconite are found on the ocean floor, and the ocean water is loaded with salts. If this water could somehow be evaporated, enough rock- and soil-derived salts would be found to make a pile "1.6 miles high over the entire area of land included within the borders of the United States and Alaska." Our lime and fertilizer industries have, as a large part of their function, the return to the land of certain of these salts. Those we are now using are not obtained from the present oceans, of course, but from ancient seas that have become dry land. Some 33½ million tons of ocean- and air-derived substances were applied to the farmed land of the United States during the year 1944. In terms of 25-ton cars, this would require a train extending three times the distance between New York and San Francisco, and the length of that train increases year by year.

Plants Need More than NPK

Along the Atlantic Seaboard we not only find it necessary to apply nitrogen, phosphorus, potassium, calcium, and sulphur to the soil, but magnesium, manganese, boron, copper, and zinc as well. Some farmers are supplying so nearly everything plants require that they are, in effect, simulating the sand-solution-culture system now so widely employed for research purposes in agricultural experiment station greenhouses.

Boron provides a good example of the problem presented by deficiencies of some of the minor plant-nutrient elements. The quantity of this element required by plants is so small that most soils were expected to continue supplying adequate amounts of it more or less permanently. But here and there over the United States certain unexplained difficulties began to be experienced. Thus the heads of cauliflower plants in some areas were ruined by unsightly brown spots, stalks of celery developed rust-colored cracks, the tips of alfalfa plants turned yellow and stopped growing, the clovers produced very little seed, discolored areas developed in the white flesh of turnips, rutabagas, and radishes, and the terminal buds of sunflower plants became discolored and died. These, it was later found, are certain signs of boron-deficiency.

Borax Adds Ton of Hay

Recently this problem has been carefully investigated in New Jersey. Four methods were employed in testing the adequacy of the soil's supply of boron: the sunflower was used as an indicator plant for testing soils in the

greenhouse for boron deficiency; turnips were sown in widely scattered parts of the State to see whether the typical discoloration of the flesh developed; borax, a source of boron, was applied on an equally wide scale to determine whether crop growth could be stimulated by its use; and large numbers of samples of soil were analyzed for their boron content. As a result of these procedures it was found that about 12 per cent of the soil needs to have borax applied to it now. In some cases the effect of the added borax was phenomenal. Thus the yield of clover seed was doubled in one test and an extra ton of alfalfa hay was produced in another by a mere 20-pound-per-acre application of borax. Yet the boron-requirement of plants is so small that only about 10 ounces of the element are needed in soluble form in the two million pounds of soil that make up the plow depth of each acre.

One could continue picking the soils of humid areas to pieces and finding deficiencies of essential elements. In many cases the remedy is simple, calling merely for the use of a few ounces or pounds of some extra constituent in the fertilizer. In others the problem is complicated by an excess of some toxic element, the solubility of which has been increased as a result of the increasing acidity of the soil. Thus as soils become more acid, more aluminum moves into solution to the detriment of the crop and possibly of the animal consuming it. Sometimes the troubles are located so deep down in the subsoil that great difficulty is experienced in applying the remedy. The technique of trouble-shooting in soil science frequently calls for spade and muscle rather than spatula and microscope.

Quality More than Quantity

Up to this point our attention has been focused on the problem of preventing soil deficiencies from limiting crop yields. But the consumer is concerned more with quality than with acre-yields of food crops, and he might well raise certain embarrassing questions, of which the following are examples:

1. Would it be desirable for those who live in high-rainfall regions to use more food and feed from the semi-arid regions and less from the areas nearer home?
2. Should the quality of the soil and its underlying rock be taken into consideration in choosing a location in which to bring up calves, colts, chicks, and children?
3. Does it make any difference to the consumer whether the apples, asparagus, cabbage, corn, onions, oranges, peppers, potatoes, turnips, tomatoes, snapbeans, spinach, watermelons, and wheat he eats were grown on good or poor soil?
4. Is it a matter of any moment to men and animals whether farmers in high-rainfall areas lime the land on which they grow their crops?
5. Are properly-fertilized crops to be preferred over those grown on soils in a low state of fertility?

Extra Values in Some Soils

A great many isolated facts are known that, when pieced together, aid in answering some of these questions. Among these, the following typical examples are noteworthy:

1. The earliest civilizations reached their highest levels and greatest permanence on the unleached soils of semi-arid areas.
2. Limestone valleys, the world over, are highly favored for livestock production.
3. The Bluegrass Region of Kentucky, famed for its fine horses, is located on soil having a very high phosphorus content.
4. The inhabitants of certain localities in Texas are seldom troubled with decaying teeth.
5. Notably fine physical specimens of mankind are found in the relatively dry Great Plains area of this country.

Mineral-Deficient Areas Known

In contrast, there are many examples of impairment in the health of men and animals growing out of a lack of essential mineral elements in the foodstuffs, of which the following examples, chosen mostly from the United States, are illustrative:

1. The Great Lakes region has a high incidence of goitre, presumably by reason of the lack of iodine in the rocks, soils, and vegetation of that region.
2. Low-phosphorus soil areas have been found in Montana, Minnesota, and Michigan, where livestock is badly stunted, tending to have small bones and stiffened joints.
3. Deficiencies of cobalt have been reported from Florida, Texas, and New Hampshire, as a result of which animals suffer seriously from anemia.
4. Evidence indicating a lack of iron, copper, and manganese in the diet, both of children and livestock, has been noted in some of the more marginal-land areas of Florida.
5. Reports from Finland suggest that people located in regions of acid soils are more subject to tuberculosis than those living in high-lime areas.

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Potash Deliveries During 1944

Deliveries of potash for agricultural use reached a new high in 1944. Figures released by the American Potash Institute, covering deliveries for the calendar year by the five major producers, show a total of 806,367 tons K_2O contained in 1,380,446 tons of salts delivered in the United States, Canada, Cuba, Puerto Rico, and Hawaii. This represents an increase of 98,041 tons K_2O or 15.7 per cent over 1943, the previous high year.

Muriate of potash, 60 per cent grade, was by far the most popular material, representing 77.7 per cent of the total K_2O. The two sulphate forms, sulphate of potash and sulphate of potash-magnesia, made up about 8 per cent of the total; the 50 per cent muriate of potash grade 7.2 per cent; and manure salts 7.1 per cent. Most of the increase in potash delivered was in the form of 60 per cent muriate of potash, with the sulphate forms and the 50 per cent muriate grade also above 1943. Manure salts deliveries were a little behind the preceding year.

Deliveries for agricultural purposes in the United States totaled 652,260 tons K_2O, an increase of 13.6 per cent over last year. This potash went to 40 states and the District of Columbia, one more state than last year.

The eight leading states for potash deliveries in 1914 were Georgia, Ohio, Virginia, Florida, North Carolina, Illinois, Maryland, and South Carolina, in the order named. Each took more than 40,000 tons K_2O. This list contains the same states as in 1943, but there is a significant shift in the order. Ohio is second and Illinois sixth in 1944; while in 1943, these states were fifth and eighth respectively, indicating the increasing importance of the Midwest as a market for potash.

Canadian deliveries reached a record total of 44,629 tons K_2O in 1944 and increase of 33.7 per cent over 1943. Deliveries in Cuba were 2,831 tons, an increase of 158 per cent over the preceding year; while Puerto Rico took 15,191 tons K_2O, an increase of 32.8 per cent. Deliveries to Hawaii were 8,336 tons K_2O, 67.1 per cent over 1943.

Deliveries of potash salts for chemical use in 1944 were 133,343 tons of salts containing an equivalent of 83,120 tons K_2O, a reduction of 1,247 tons K_2O or 1.5 per cent under 1943. This potash went to 26 states and Canada. The muriate form comprised 97.8 per cent of the total K_2O.

POTASH DELIVERIES

Short Tons K_2O

Agricultural	Calendar Year 1944	Calendar Year 1943
United States		
Muriate 60%..	503,082	431,146
50%..	50,266	48,420
Manure Salts..	47,971	49,006
Sulphate and Sul. Pot.-Mag.....	50,941	45,731
Total.....	652,260	574,302
Canada.....	44,629	33,377
Cuba.....	2,831	1,096
Puerto Rico.....	15,191	11,443
Hawaii.....	8,336	4,988
Total Agricultural	723,247	625,206
Chemical Potash .	83,120	84,367
Grand Total.	806,367	709,573

Nitrogen Prospects for 1945-1946

More nitrogen may be available for agricultural use in the near future, War Production Board officials told the members of the Nitrogen Producers Industry Advisory Committee at a recent meeting. However, WPB emphasized, at the present time nitrogen supplies are not adequate to meet all demands.

According to the War Food Administration, requests for nitrogen for domestic agricultural use (including Hawaii and Puerto Rico) for the agricultural year beginning July 1, 1945, amount to approximately 800,000 tons. Approximately 712,000 tons of nitrogen will be available for these requests, WPB said, but it is hoped that more nitrogen will be available to meet the requirements in full.

Two new projects, each with a monthly production capacity of approximately 5,000 tons, will probably start production within the next few months, the committee was told. Possible cuts in the munitions program would also mean more nitrogen for agriculture, WPB said. However, these cuts have not as yet materialized, they added. The nitrogen requirements for liberated European areas are expected to be heavy, WPB told the committee.

The committee unanimously recommended that allocation of nitrogen be continued on the present basis until it is possible for all controls to be removed completely. They said that the question of removing controls should be reconsidered in June or July, when more definite information on supplies and requirements is available.

Industry Advisory Committee Surveys Future Fertilizer Problems

THE WFA Fertilizer Industry Advisory Committee met at Washington on May 17, 1945, G. F. MacLeod, WFA, presiding. Also present: H. M. Albright, H. B. Baylor (for Franklin Farley), George Cushman, Ralph B. Douglass, George W. Gage, M. H. Lockwood, John L. Morris (for Wm. B. Tilghman, Jr.), M. H. McCord (for C. F. Hockley), Weller Noble, O. J. Noer, Walter S. Rupp, John E. Sanford, C. D. Shallenberger, F. T. Techter (for S. B. Haskell), Nelson T. White, F. J. Woods, J. A. Woods, members of the Committee; Richard Bradfield, Charles J. Brand, C. T. Brown, R. W. Cummings, F. W. Darner, J. C. Dean, F. S. Lodge, D. S. Murph, A. D. Strobhar, J. W. Turrentine, Robert E. Yoder, by invitation; G. R. Carson, T. L. Jefferies, C. L. Long, J. E. Nunnally, L. G. Porter, G. M. Worman, Fertilizers Division, WFA, U.S.D.A.; D. W. Aitken, W. E. Atterbury, W. C. Berger, A. E. Burns, M. L. DuMars, W. G. Finn, W. A. Minor, F. W. Parker, W. F. Watkins, other U.S.D.A.; Dale C. Kieffer, William Lehman, H. L. Taylor, Alonzo White, WPB; J. C. Freeman, C. G. Gran, W. T. Hart, OPA; C. K. Horner, U. S. Department of Commerce.

Dr. MacLeod opened the meeting with a general discussion of the world-wide picture of fertilizer supplies.

Preliminary estimates indicate a world shortage of nitrogen, of phosphoric acid, and of potash. The inability to balance overall exports and imports accentuates the difficulties of the situation.

Edible Oilseed Meals

WFA reported that, contrary to hopes and because of the urgent need of protein for feed, continued restrictions on the use of edible oilseed meals for fertilizers will be necessary. It is probable that not more such meals can be released for fertilizer use next year than were so released for the current year. It was indicated that War Food Order 105, governing the acquisition of edible oilseed meals for fertilizer use, will be continued in effect in substantially its present form.

Potash

WPB reported that the present outlook indicated that agriculture would obtain about the same amount of total K_2O as last year. Unless specifically requested otherwise, however, only about 25 to 50 per cent as much manure salts will be allocated to each manufacturer as last year, the difference being made up in the form of 60 per cent muriate. There is little prospect that additional sulphate of potash will be available. Deliveries for agriculture in 1944–1945 amounted to 714,325 tons K_2O, and estimated allocations for 1945–1946 now stand at 733,800 tons K_2O. Production for 1944–1945 was about 869,000 tons. Estimated production next year is about 890,000 tons K_2O, of which 94,000 tons go for chemical use, with Canadian and other exports amounting to about 59,000 tons K_2O. Production of 60 per cent muriate for agriculture is expected to increase from 564,000 tons K_2O this year to 607,000 tons in 1945–1946. Members of the Committee pointed out that there was considerable potash inventory in the hands of fertilizer manufacturers at the beginning of the 1944–1945 year but there would be practically no inventory at the start of the 1945–1946 year. It was also stated that sulphate of potash supplies should be increased if at all possible.

Nitrogen

In commenting on the nitrogen situation, WPB reported that while in April it looked as if only 557,000 tons of N would be available for 1944–1945 it now looks as if about 660,000 tons N would be available. Use of inventory carry-over from last year by fertilizer manufacturers may increase this figure by 20,000 tons N. The change in munitions requirements since V-E Day will permit about 100 cars of solutions to be shipped in May and possibly 300 in June. It is expected that TVA can furnish 4,000 tons of ammonium nitrate in May and 7,000 tons in June. Ordnance will not require any of private industry production of anhydrous ammonia in June. For the 1945–1946 year it appears that all private

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IT MAY BE

By SAMUEL L. VEITCH

Employment After the War

Within two years after the end of fighting, federal expenditures will drop from about $90,000,000,000 to $25,000,000,000 a year. This will represent the greatest and swiftest disappearance of markets in all history. Within a year after the fighting, eight or nine million men will leave the Armed Service, two million will leave the civilian government jobs, and five million will be laid off by plants making combat munitions. Of thirteen million additional men making war goods, perhaps half will be laid off. Some of these soldiers, sailors and workers will leave the labor market altogether, but nearly twenty million of them will be looking for jobs; not, necessarily, all at once but within a year after the firing ceases. Is there any chance that this large and sudden collapse in demand will fail to plunge the country into a depression worse than that of 1933?

The Picture May Change

Let us look at the other side of the picture. We shall be living in a world of superlatives—a world of record-breaking "highs" and "lows." When the war ends, the accumulated needs of American consumers and American business enterprises will also be at all-time highs.

Back in 1941, with six million people unemployed, Americans were driving twenty-nine million automobiles but by the end of 1945 the number of automobiles will probably be down to less than twenty-two million. If, by any chance, employment after the war is lighter than 1940, Americans will wish to drive considerably more than twenty-nine million automobiles—it may be thirty-three million or thirty-four million.

Civilian Demands

There are over six hundred articles of iron and steel that have not been made for civilian use since early in 1942. Most durable household goods, for example, have not been made since 1942. It is reasonable to estimate that, by the end of the war (say in 1945 or 1946), the accumulation of deferred demand will be equal to two years' sales at the 1940 rate. This is a rather conservative estimate because in 1940 an average of about seven million persons were unemployed.

The annual increase in the number of families in the United States is about 550,000. If every house lasted forever, we should need about 550,000 new dwelling units each year to provide for the increase in families. In 1942, the number of permanent dwelling units constructed was 358,000; in 1943, it was still less and in 1944 and 1945 it dropped still further. By the end of 1945 there will be a deficiency of at least 750,000 in the number of permanent dwelling units constructed since Pearl Harbor.

Yearly Marriages

The normal number of marriages in the United States is about 1,400,000 a year. The number of marriages varies with business conditions and one can judge the state of business simply by plotting year by year the number of marriages on a chart. In 1932, the number of marriages fell to 982,000. In 1940, it was 1,565,000 or 165,000 above normal; in 1941, it was 1,616,000 or 216,000 above normal and in 1942, it was 1,800,000 and in 1943, 1,750,000. At present there are about 1,200,000 more married couples in the United States than there would have been, had the war not occurred. In 1944, the number of marriages sank down to normal and it may be below normal in 1945. If the war ends by 1946, the number of families will be 800,000 to 1,000,000 greater than it would have been, had the war not occurred. A high proportion of the 7,000,000 couples who have been married during the last four years have not set up housekeeping and have purchased little furniture, rugs and household equipment. The greatest marriage year in human history was 1920. In all of Europe and in the United States, the number of marriages reached a new high. This was true regardless of whether the country was in the war or not, regardless of whether it was on the winning or losing side, regardless of whether or not it was experiencing extreme inflation. About a year after the service men are demobilized, marriages in the United States will reach another peak. It seems certain that the accumulated

need for household goods and equipment after the war, will reach new highs.

Purchasing Power

Great and pressing needs for goods do not necessarily mean demand. That requires purchasing power. During the last three years individuals have been compelled, by the sheer scarcity of consumer goods, to save over $75,000,000,000. But even though prices have risen, individual incomes have been so large that they exceeded, at current prices, the supply of consumer goods by $75,000,000,000. During the last three years individuals have saved as much as they would have saved in ten years at the 1940 rate. Before the end of the war the increase in the savings of the individuals will be equal to fifteen years' saving at the 1940 rate. At present the liquid assets of individuals (that is their holdings of cash, demand deposits, time deposits and war savings bonds) are twice their holdings of that at the end of 1940.

Business Enterprises Increased

Business enterprises have also greatly increased their liquid assets Although the tax liabilities of corporations increased nearly 15 billion dollars between 1939 and 1943, their holdings of cash, bank deposits and government securities increased by 25½ billion dollars and their net working capital by 17 billion dollars

No one really knows whether business immediately after the war is going to be good or bad. Make no mistake about this. The greatest and quickest disappearance of markets in all history is going to hit a community which has a far greater accumulation of needs and a far larger accumulation of purchasing power than have ever before existed. Perhaps men will refuse to use their record-breaking holdings of purchasing power to satisfy their huge accumulated needs. Never before, however, have people who are well supplied with purchasing power been unwilling to use it to feed and clothe themselves and to provide themselves shelter, education, travel and amusement. If a great and prolonged depression follows the war in the United States, it will be because people who have more money and liquid assets than they have ever owned are unwilling to use them to satisfy their needs.

Let us suppose that 57,000,000 people are working after the war and that they are working about 7½ per cent fewer hours per week than they are working today. This would be a short enough working week to eliminate most of the overtime payments. Many people would be working in occupations where the product of an hour's work has a smaller value than the product of an hour's work in war industries today. At 1943 prices and at present efficiency, the output of 57,000,000 people would be about $156,000,000,000 a year. The national, state and local governments will take about $31,000,000,000 of this product, leaving $125,000,000,000 available for private consumption.

The income of 57,000,000 persons working 7½ per cent fewer hours per week than in 1943 would be about $130,000,000,000. After the payment of personal taxes, they would have about $118,000,000,000 to spend on goods, or to save. How much of this would they spend for goods? Let us begin by asking about non-durable goods. How much more would you have spent on beefsteaks, milk, butter, cheese, gasoline, tires, new equipment, in 1944, if these goods had been available? How much more would you have spent on railroad travel and on hotel accommodations if you had had time to take vacations or if accommodations had been available? How much more would you have spent on painting your house or repairing equipment if labor had been available? As a conservative estimate, it could be assumed that the demand for non-durable goods in 1944 would have been 10 per cent more than it actually was. Adjusting this rate of spending to a disposable income of $118,000,000,000 indicates a postwar demand for non-durable goods of $89,800,000,000.

The demand for durable goods may be put at 12 per cent of disposable income. This is the fraction of disposable income which consumers spend for durable goods in fairly prosperous years. This would make a demand for durable goods at 14.2 billion dollars —just double the dollar demand of 1940 and perhaps 40 per cent above the physical demand of 1940. This takes no account of the "catching up" demand for durable goods. In physical terms, this may be placed at double the demand for 1940. In terms of 1943 prices, the "catching up" demand for durable goods, if spread over four years, would average 4.4 billion dollars a year. All of this indicates a total postwar demand for consumer goods, at 1943 prices, of roughly 106.4 billion dollars. For the first time in the history of the country the demand for consumer goods will exceed $100,000,000,000 a year. If consumers buy 106.4 billion dollars of goods and if government expenditures leave 125 billion dollars for private use, there will remain about 18.6

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Principal Articles in This Issue

Association Support

Government control of the fertilizer industry in wartimes may be nearing an end, but if pending legislation in Congress is enacted, the Government will be in the fertilizer business.

A simple "as-you-were" return to the peacetime way of life is not yet in the books for the fertilizer industry. Some home front fighting must first be waged to a successful conclusion, else the fertilizer industry will become the guinea pig in a Government experiment in socialism.

Of course, fertilizer manufacturers, large and small, are not willing to surrender without a fight. The best way to fight is as an organized body and the only organization capable of putting up a fight is The National Fertilizer Association, the organization that has always waged the battles of the industry.

No organization is stronger than its members and no industry organization can bring a full measure of influence to bear that does not have every member of the industry supporting its efforts.

Not only should the Association receive full industry support to keep the Government from engaging in the manufacture and distribution of fertilizers, but other problems are to be faced such as tax-paying fertilizer manufacturers competing with tax-free cooperatives in producing and distributing fertilizers, problems of limiting grades of fertilizers in line with policies adopted under war conditions, and others that will arise as agriculture readjusts itself to a peacetime basis.

The Association recently held its annual meeting, and adopted changes in its by-laws and constitution that provide for a full-time president and give authority to the Board of Directors to employ the president and to function more directly and closely in shaping industry action.

The Association is, in fact, launching out anew and vigorously, and is apparently in position to serve the industry better than ever before. For those on the outside, this seems a good time to come in and lend a hand.

Greiner Promoted by Hammond Bag

M. E. Greiner was recently elected Vice-President in charge of sales of the Hammond Bag and Paper Company. Mr. Greiner is continuing to serve as Assistant General Manager.

New Plant for Chase Bag Company

Contracts have been signed by officials of the Chase Bag Company for a new paper bag manufacturing plant at Crossett, Arkansas, according to an announcement by F. H. Ludington, President of the company at 155 East 44th Street, New York City.

A complete line of multiwall paper shipping sacks of pasted or sewed bottom, valve or open mouth constructions will be made at the plant as well as many other types of commercial paper bags. The capacity of the plant has not been announced but it will be substantial, according to Mr. Ludington, and will be modern in every respect.

The erection of this plant comes as a step in a prewar planned expansion program that was halted at the beginning of hostilities. The location was selected because of the excellent grade of paper available from the near-by plant of the Crossett Paper Mills, and because of the unending supply of pulpwood in the area.

Work on the plant is just beginning. No official opening date has been set.

Barrett Booklet on Nitrogen Solutions

How to formulate with Barrett's standard nitrogen solutions, with full info mation as to procedures, is presented in a booklet issued by the Barrett Division of the Allied Chemical and Dye Corporation, 40 Rector Street, New York 6, N. Y. It is a very handy book for the fertilizer manufacturer, formulating, as it does, many of the leading grades of fertilizers and base mixtures with details of each step to be taken.

Rockwell Now Advertising Manager of American Cyanamid

The American Cyanamid Company, Fertilizer Division, announces the appointment of Reynolds G. Rockwell as Advertising Manager. Mr. Rockwell, who succeeds the late A. L. Tichane, was formerly associated with E. I. du Pont de Nemours & Company, Inc., at Wilmington, Del., and Pan American World Airways in New York. He is a veteran of the U. S. Coast Guard with which he sailed in the anti-submarine patrol during the early months of the war.

Brown Elected President of Federal Chemical Company

The Board of Directors of Federal Chemical Company, Louisville, Kentucky, has announced the election of Claude T. Brown to the office of president. He succeeds the late A. E. Sheldon, who died on May 4th. Mr. Brown has served for a number of years as vice-president of the Company.

Bemis Bag Wins Industrial Publication Awards

In the annual contest recently held by the Industrial Press Association of Greater St. Louis, the Bemis Bro. Bag Company's employee publication, *Bemistory*, won three of the six awards for industrial publications and received honorable mention in a fourth. Twenty-seven industrial publications were entered. The seven judges, drawn widely from the field of journalism, selected *Bemistory* for outstanding industrial journalism, for the best presentation of personals, and for the best feature story. Honorable mention was for the best use of photographs.

Bemistory is a twenty-four page monthly magazine published since 1941. It is edited by Misses Peggy Englesing and Mina Sennott for the 8,000 Bemis Bro. Bag Company employees all over the country. It is also sent regularly to all former Bemis employees who are now in the service of Uncle Sam.

Obituary

Verne F. Curtis

Verne F. Curtis, assistant chief engineer of International Minerals and Chemical Corporation, died of a heart attack April 25th at his home in Evanston, Ill. He was 46 years of age.

Mr. Curtis has been associated with International Minerals and Chemical Corporation since 1941. A graduate of the University of Minnesota School of Engineering, he had a wide background of engineering experience which included work in the city engineering department of Minneapolis, Minn., and three years as resident engineer on a municipal project at Bahia, Brazil.

Surviving Mr. Curtis are his wife, the former Mary McCormick; a son, Dick; a daughter, Kathleen, and a sister, Mrs. Vera Meili of Glendale, Calif.

April Sulphate of Ammonia

Production of by-product sulphate of ammonia during April amounted to 64,139 tons, a decrease of almost 9 per cent from the figures for March, according to the monthly report of the U. S. Bureau of Mines. A part of this drop is due to the slightly shorter month but the general trend is indicated by the fact that for the first four months of the year, production was 2 per cent less than for the same period of 1944. Sales during April totaled 69,783 tons, thus further reducing the stocks on hand to 28,774 tons by the end of the month.

	Sulphate of Ammonia Tons	Ammonia Liquor Tons NH_3
Production		
April, 1945	64,139	2,340
March, 1945	70,412	2,412
April, 1944	67,661	2,680
January–April, 1945	264,386	9,524
January–April, 1944	269,804	10,793
Sales		
April, 1945	69,743	2,373
March, 1945	82,932	2,504
April, 1944	64,937	2,618
Stocks on Hand		
April 30, 1945	28,774	596
March 31, 1945	34,452	767
April 30, 1944	26,598	662
March 31, 1944	22,256	750

DDT Allotted to Oregon Potato Growers

The first approved commercial use of DDT, the war-developed insect killer, has been announced by the Chemicals Bureau of the War Production Board.

Upon the request of the War Food Administration, a limited quantity of technical grade (the best commercial grade) DDT has been made available in Oregon only for use against the potato tuber flea beetle, WPB said. The request from WFA was based on the importance of potatoes in the food program and the fact that materials normally used for controlling the potato tuber flea beetle are not available.

Use of a three per cent DDT dust was recommended for the control of the potato tuber flea beetle in a bulletin recently published by Oregon State College.

No deleterious residue problem is involved in the treatment of potato vines with this concentration, and there is no great danger of harming the other vegetation and bird, insect and animal life by this proposed application of DDT, WFA said.

WFA explained that the use of DDT against this insect is restricted to Oregon because it is only in that area that severe damage to the tuber cannot be prevented by materials used elsewhere, such as calcium arsenate or cryolite.

Sulphur Production Increasing

In the first quarter of 1945 sales of sulphur were at a record level, according to figures released by the Bureau of Mines, United States Department of the Interior. Nearly a million tons were shipped from the mines. Production was 39 per cent greater than in the same period of 1944 but was slightly below the record set in 1942. As sales exceeded production, producers' stocks declined to 3,923,373 long tons.

Period	Production Long tons	Mine Shipments Long tons	Producers' Stocks Long tons
Jan.-March, 1945	826,667	999,885	3,923,373
Jan.-March, 1944	595,593	801,122	4,251,744
Jan.-March, 1943	664,611	581,753	5,115,214
Jan.-March, 1942	837,989	724,863	4,820,968

FERTILIZER MATERIALS MARKET

NEW YORK

Supplies of Nitrogen Materials Still Inadequate to Meet Demand. Superphosphate Plants to Operate During Summer to Build up Supplies for Next Fall and Spring. More Potash Expected for Coming Fertilizer Year.

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, May 31, 1945.

Sulphate of Ammonia

Demand for this material continues active with no excess inventories accumulating in fertilizer plants. WPB has permitted mixers to purchase additional supplies if they can find producers with available stocks on hand.

Nitrate of Soda

Nitrate of soda continues in great demand. Domestic production and imports are being taken as fast as available. Reports indicate that more top-dressing will be used this year to make up for a shortage of nitrogen in fertilizers applied at planting. May prices have been continued during June.

Organic Ammoniates

The curtailment of meat production continues to affect the supply of by-product materials. The feed industry is taking about everything that is being offered. Some fertilizer grade material is being delivered on old contracts.

Superphosphate

Demand is still keeping up with available supply and contracts for future delivery are now being negotiated. Due to low current inventories, plants will probably operate to a greater extent during the summer than is usual.

Phosphate Rock

Transportation continues to be the major problem of phosphate rock producers. Government agencies and the railroads are working on this problem. The possibilities of increased water transportation are being studied but the vessels available are too large to be accommodated by the wharfage facilities of most seaboard superphosphate producers.

Potash

Plans for the coming year place allocations at 733,800 tons K_2O, compared with 714,325 tons during the current season. It is expected that sales of manure salts will be cut from 50 to 75 per cent but this will be offset by increased supplies of the more concentrated muriate. There seems to be no prospect for improvement in the supply of sulphate of potash for tobacco growers. Very few fertilizer mixers will have any supplies of potash salts left over at the end of the present fertilizer year.

CHARLESTON

Prices Quoted on Milorganite and Smirow. Nitrogen Solutions Scarce. Box Car Shortage Hampers Phosphate Rock Shipments.

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, June 1, 1945.

The trade was very sorry indeed to learn of the death on May 30th of John E. Gibbs, president of the Etiwan Fertilizer Company, of Charleston, and also an officer of the Shipyard River Terminal. Mr. Gibbs has been in the fertilizer business for many years and was one of the most highly regarded men in the industry.

Organics.—The producers of Milorganite are now offering to give buyers some tonnage for the coming season on an historical basis, at the same price as last season, namely, $3.00 per unit of ammonia, 40 cents per unit A.P.A., f.o.b. Milwaukee, Wisconsin. The producers of Smirow are offering on the historical basis at $3.15 per unit of ammonia, f.o.b. Chemical, Illinois.

Sulphate of Ammonia.—This continues exceedingly scarce, for nearby shipment.

Nitrogen Solutions.—Fertilizer manufacturers, in spite of reports to the contrary, are experiencing considerable difficulty in getting any June nitrogen solutions.

Nitrate of Soda.—The prices effective for May on domestic material have been extended through June.

Phosphate Rock.—The shortage of box cars is having a very serious effect on the delivery of phosphate rock. If this continues, the superphosphate manufacturers will fall behind considerably in their production.

Fertilizer Materials

Let us Quote on YOUR Requirements

PHOSPHATE ROCK
SUPERPHOSPHATE
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CHICAGO

Fertilizer Organics in Tight Supply with no Improvement in Sight. Feed Material Supplies Practically Exhausted

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, May 29, 1945.

The tight supply of organics has proved a hardship on many buyers, who for some time have been unable to procure their full needs. Whether this situation will continue long enough to affect next season's business, remains to be seen. Organic producers are not expressing encouragement.

The feed trade finds raw material practically exhausted, leaving the market in extremely tight position. The demand for feed still outstrips production.

Under these circumstances full ceiling prices are easily maintained.

Ceiling prices are:

High grade ground fertilizer tankage, $3.85 to $4.00 ($4.68 to $4.86 per unit N) and 10 cents; standard grades crushed feeding tankage, $5.53 per unit ammonia ($6.72 per unit N); blood, $5.53 ($6.72 per unit N); dry rendered tankage, $1.25 per unit of protein, f. o. b. producing points.

Personal Mention

Thomas L. Jefferies, who has been in charge of the Fertilizers Division of the Chemicals and Fertilizers Branch, WFA, has resigned and will return to Chilean Nitrate Sales Corporation. He has been succeeded by *J. E. Nunnally*, who has been serving as Field Service Representative of the Chemicals and Fertilizers Branch in the Southern area.

Dr. H. K. Wilson, University of Minnesota, has been named head of the Department of Agronomy, Pennsylvania State College, effective July 1st, succeeding Dr. C. F. Noll who retires on that date. Dr. Wilson is a graduate of Iowa State College and the University of Illinois and has been a member of the agronomy staff at Minnesota since 1927.

Prof. E. A. Trowbridge, Professor of Animal Husbandry, has been named Dean of Agriculture and Director of the Missouri Agricultural Experiment Station, effective September 1st, to succeed Dean M. F. Miller who is retiring. Professor Trowbridge graduated from the University of Wisconsin in 1906 and has been in Missouri in livestock work ever since. *Prof. Sam B. Shirky*, Assistant to the Dean, will become Assistant Dean of Agriculture on September 1, 1945.

Paul C. Stark of Louisiana, Mo., now serving as president of the National Victory Garden Institute, has been named Director of Home Food Supply to coordinate various Government activities affecting the food supply produced or consumed in the home, according to recent announcement by WFA.

Dr. Norman J. Volk, head of the Department of Agronomy of the Indiana Agricultural Experiment Station and of Purdue University, Lafayette, Ind., has been appointed associate director of the Agricultural Experiment Station.

Charles F. McGovern is now associated with the newly organized Chemical and Equipment Division of the O. Hommel Company, of Pittsburgh, Pa. Mr. McGovern served in the U. S. Navy on a destroyer in World War I. After the war he went to work for the American Cyanamid and Chemical Corp. and served as sales representative for seventeen years, before joining the staff of the O. Hommel Company.

Superphosphate and Sulphuric Acid Facilities To Be Expanded

The superphosphate industry is willing to expand facilities for the production of both superphosphate and sulphuric acid to meet requirements, the Superphosphate Producers Industry Advisory Committee emphasized at a recent meeting, according to a War Production Board report:

Committee members pointed out that this expansion could be accomplished without financial aid from the Government. However, priority assistance for the necessary construction would be essential, they said.

Production of approximately 6,800,000 tons of superphosphate is expected for the 1944–1945 fertilizer year (July through June), as compared with a production of 6,831,000 tons for the 1943–1944 fertilizer year, WPB told the committee. Actual production for the first nine months of the 1944–1945 year (July 1944 through March, 1945) was 5,000,000 tons as compared with a production of 5,081,000 tons in the first nine months of the 1943–1944 year.

Production of triple-superphosphate has also declined. Estimated production for the 1944–1945 fertilizer year is 240,000 tons, as compared with 289,000 tons for the last fertilizer year. WPB said that decreases in Tennessee Valley Authority production have accounted for some of this loss, although production difficulties in other plants also have affected the situation.

The total annual capacity for the industry, according to WPB, is approximately 9,100,000 tons. However, annual quotas set up this year, based on existing limiting factors such as manpower and sulphuric acid supplies, totaled 7,850,000 tons.

Committee members were of the opinion that this estimate does not represent the true capacity of the industry. They recommended an investigation by WPB to determine what could be produced with full-time operations in light of the available supplies of sulphuric acid, phosphate rock and labor. Many small producers who depend on purchased acid are not at present utilizing full capacities, the committee emphasized.

Production quotas should continue to be established and used as a guide in attempting to arrange for supplies of sulphuric acid in various areas, the committee said.

Unless drastic Ordnance program changes in the production of sulphuric acid are instituted in the near future, the general supply of sulphuric acid is expected to be satisfactory, WPB said. Under construction now and expected to be completed in the coming months are fifteen projects for new construction or expansion, which will increase the over-all output of sulphuric acid by 500,000 tons annually, the committee was told.

However, WPB pointed out, extensive cutbacks in Ordance-operated sulphuric acid plants could result in a direct loss to the superphosphate industry, unless operation of these plants was undertaken solely for the purposes of supplying the fertilizer industry. In this case, the cost of the acid would probably increase, as it would then be necessary to install new power and water facilities, WPB pointed out.

A supply of tank cars that should meet all requirements for the transporting of sulphuric acid is expected to alleviate transportation problems. Now being constructed by the Army are 361 acid cars, while 150 cars are under construction by private industry, the committee was told.

Growing sunflowers for producing an edible oil is a new agricultural commercial enterprise in North Dakota.

Textile Bag Requirements Increase

Textile bag requirements have increased with victory in Europe as a consequence of relief feeding, and shipments require bags. The demand for bags, the Food Administration announces, is up 20 per cent with allocation of textile bags running more than 5 per cent less than last year.

During the first two quarters this year, allocations for cotton bags totalled about 477,000,000 yards compared with 570,000,000 yards for the similar quarters last year.

Burlap allocations are larger than last year, but the total allocations for bags in the first half of this year are about 850,000,000 yards compared with 900,000,000 in the first half of 1944.

For these reasons domestic users of bags are being urged by the Government to conserve bags and sell for reuse.

Apple Crop Short

Unseasonably high temperatures in early April, causing apples to bloom almost a month ahead of time in New England, followed by cold weather and frosts, caused a loss of one-third or more of the apple crop. Late blooming varieties comprise the bulk of the prospective crop.

Use of Lignin as Fertilizer Base

Under the auspices of the Northeastern Wood Utilization Council, a closed meeting of the council will be held June 29th, at Orono, Maine, to discuss, among other subjects, the possibilities of using the lignin waste of paper mills as a base for fertilizers.

Among the papers scheduled are "Wood Ashes for Fertilizer" by Herbert A. Lunt, Maine Agricultural Experiment Station; "Sawdust Bedding with Superphosphate Treatment" by J. W. White, Pennsylvania State College; "Impregnation with Nitrates and Phosphates," by V. Sauchelli, Davison Chemical Company, Baltimore, Md., and A. J. Struve, Eastern Farmers' Exchange, Buffalo, N. Y.

IT MAY BE

(Continued from page 13)

billion dollars of goods to meet the demands of business.

Demands of Business

What are likely to be the demands of business? The replacements of equipment will be large. It is likely to run 1½ times corporate depreciation allowances, or about $12,000,000,000. Industrial construction, for a while, may be expected to be small, because business enterprises will await the clarification of economic trends before making long term plans. In physical volume industrial construction for a while may be no higher than in 1939. At 1943 prices, it would be about $4,000,000,000 a year. The restoration of inventories will take about $3,000,000,000 a year for three years. The demand for housing may be held down for a year or two because people will await clarification of economic conditions before starting to build. At any rate, let us hope that it is slow to rise. If it is no greater in physical volume than the low level of 1939, it will be about 2.6 billion dollars based on 1943 prices. Temporarily, at least, a considerable export surplus may be expected over and above contributions made by our government to other countries which are included in the purchase of goods by the government. If we succeed in keeping the export surplus down to smaller physical volume than after the first World War, it may be no more than $3,000,000,000 a year. All of this comes to a business and residential building demand of about 22½ billion dollars a year. In other words, with 57,000,000 people working about 7½ per cent fewer hours per week at present efficiency, the output of goods would fall short by a small margin of meeting the probable demand. With a moderate improvement in efficiency, however, the demand would be met.

The conclusion is that the postwar demand for goods is likely for a year or two or more to test the productive capacity of American industry but that business enterprises, with moderate improvements in efficiency, should be able to prevent a disorderly rise in prices from being started by an excess of demand.

A Complete Service

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We manufacture all grades of Commercial Fertilizers, Superphosphate, Agrinite Tankage, Bone Black, Bone Black Pigments (Cosmic Black), Dicalcium Phosphate, Monocalcium Phosphate, Gelatin, Agricultural Insecticides (including Pyrox, Arsenate of Lead, Calcium Arsenate, etc.), Trisodium and Disodium Phosphate, Phosphorus, Phosphoric Acid, Sulphuric Acid, Ammonium Fluosilicate, Magnesium Fluosilicate, Zinc Fluosilicate, Salt Cake; and we are importers and/or dealers in Nitrate of Soda, Cyanamid, Potash Salts, Sulphate of Ammonia, Raw Bone Meal, Steamed Bone Meal, Sheep and Goat Manure, Fish and Blood. We mine and sell all grades of Florida Pebble Phosphate Rock.

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Chambly Canton, Quebec, Can.
Charleston, S. C.
Cincinnati, Ohio
Cleveland, Ohio
Detroit, Mich.
East St. Louis, Ill.
Greensboro, N. C.
Havana, Cuba
Henderson, N. C.
Montgomery, Ala.
Norfolk, Va.
No. Weymouth, Mass.
Pensacola, Fla.
Pierce, Fla.
Port Hope, Ont., Can.
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No. Weymouth, Mass.
Pensacola, Fla.
Pierce, Fla.
Port Hope, Ont., Can.
Savannah, Ga.
Spartanburg, S. C.
Wilmington, N. C.

This does not mean that a disorderly rise in prices might not start from the side of costs—by failure of management to keep costs properly under control. Attention should be called to the fact that assumptions concerning the demand for residential construction and industrial construction are low—too low, undoubtedly, to suit many persons and far too low to last.

After the war the country will not go through simply one transition—the transition from war to peace. On the contrary it will go through a succession of transitions. Indeed, the first decade after the war will be punctuated by transitions. Suppose, for example, that with 57,000,000 people at work we wished to own and drive 34,000,000 automobiles. This would require an increase of 11,000,000 or more in the number of cars which we are likely to have on hand when fighting ceases. Suppose that in about four years after the war we bring up the number of automobiles to the number demanded, so that output need meet only replacements and the normal increase in demand. At that time the country is likely to face an "air pocket" in the demand for automobiles, unless the industry makes such radical improvements in cars that the replacement rate takes a sharp jump. Similar "air pockets" in the demand for many other durable consumer goods may occur two or three years after the end of fighting. The surplus of exports over imports will probably prove temporary—indeed, it MUST prove temporary unless we are to play Santa Claus to the rest of the world.

It seems plain that the first decade after the war will be a period of major shifts in demand—a period in which economic stability will depend upon our success in offsetting decreases in demand for some products with increases in demand for other products. Stability will require that business policies and national economic policies reflect much common sense, foresight, and self-control. Stability will require that the economy be equipped with powerful stabilizing devices to prevent disorderly rises in prices and speculative buying on the one hand and, on the other hand, to prevent "air pockets" in demand from producing circulative increases in employment.

As the accumulated demand for durable consumer goods, goods for inventories and industrial equipment subsides, we must depend for stability upon a rise in demand for industrial construction and residential building. Given sensible tax policies, the potential demand here is likely to be very large. An investment of about $2.00 in factories, mines, railroads, public utilities, stores, office buildings and inventories seems to be required for every $1.00 of goods produced for consumers per year. If annual consumer demand rises in terms of 1943 dollars by about $35,000,000,000, we shall need to increase our industrial plants, equipment and inventories, in the first five or ten years after the war by possibly $70,000,000,000.

The present high levels of factory employment have been achieved only by working many people at nights. With 57,000,000 people employed after the war, the number of non-government jobs will be three million more than it now is. These people will need places to work and machines to run. In most industries they will not be content to get employment opportunities by working nights and employers will not be disposed to pay night-shift premiums if the demand for goods seems to be fairly permanent. Hence, a large volume of factory construction will be needed. Furthermore, in competition with modern one-story factories, many old multiple-story factories will be obsolete.

The demand for housing should also be large. Most of this demand comes from families receiving $2,000 a year or more. In 1925, our best housing year, families receiving $2,000 a year or more spent slightly more than twelve cents out of each dollar of income on new housing. With disposable incomes of $118,000,000,000, families receiving $2,000 a year or more would have total incomes of $80,000,000,000 or more. If these families spent twelve cents out of every dollar after taxes for housing, as they did in the middle twenties, the annual demand for housing should run nearly $10,000,000,000 a year.

What Does the Future Hold?

These are simply some of the potentialities outlined in broad, bold strokes. They indi-

See Page 4

cate that high level employment is easily within the range of practical achievement. They indicate also, that shifts in demand may be large and even sudden and that stability in total demand, production and employment will be achieved only by wise planning. If industry, labor and the government do a good job, however, income payments to individuals should rise (on 1934 prices) from $130,000,000,000 shortly after the war to $150,000,000,000 by 1950, to $182,000,000,000 by 1960 and to $217,000,000,000 or more by 1970. These figures assume an increase of only 15 per cent per capita per decade—a much smaller increase per capita than during the twenties or during previous decades. Let us keep clearly before us these great potentialities of our economy. Awareness of them will help us keep our sights high; it will stimulate our confidence in one power to achieve; it will help us retain and develop the spirit of pioneering and innovation.

Nutritional Quality Is New Test of Farm Produce

In a recent speech before the Y's Men's Club in Oak Park, Ill., David D. Long, chief of feed and fertilizer research of International Minerals and Chemical Corporation, said that present-day farmers are beginning to analyze the purpose a particular crop is to serve rather than merely the pounds or bushels of yield.

"Yield alone does not express the true value of hay or feed when these feeds are desired for growth or animal production values," he pointed out. "Feed crops which look alike and are of the same variety and of the same grade do not always produce alike in animal gains or nutritive value in feeds and foods.

"Well balanced plant foods and soil treatments promote increases in the nutritive value of foods and feeds by the formation of different compounds than are produced on soils deficient in plant foods. Plant foods under the broad term of commercial fertilizers have specific values for different crops, and through research these specific values are gradually being developed for the special purposes desired in crop production."

INDUSTRY ADVISORY COMMITTEE SURVEYS FUTURE FERTILIZER PROBLEMS

(Continued from page 11)

synthetic nitrogen production will be available for agriculture, and if Ordnance will furnish 100,000 tons of anhydrous ammonia, this with by-product and other sources of nitrogen will furnish 510,000 tons of N domestic. Canadian nitrogen imports are expected to aggregate 95,000 tons N, and Chilean imports 1,000,000 tons nitrate of soda containing 160,000 tons N, or a total of 765,000 tons N available without using any Ordnance plant production of grained ammonium nitrate.

Superphosphate

WPB reported that V-E Day brought some adjustments in the sulphuric acid program. Current use has decreased. There has been considerable easing in the Chicago and St. Louis areas, where it appears likely that superphosphate manufacturers will be able to get all needed acid in June. Early easing is expected also in the Cleveland area. In the Southeastern area also it is expected that the situation will be somewhat easier. On the West Coast the situation probably will not be greatly relieved before the end of July. The tank car situation is improving, although the increased number of new cars coming into use will be at least partly offset by the increased number of old cars necessarily withdrawn for repairs.

The superphosphate subcommittee reported that the superphosphate supply situation had not changed greatly since the February 15th meeting of the Committee. Production figures, all basis 18 per cent, for 1944–45 (actual for the first three quarters and estimated for the fourth quarter) were given as: Normal superphosphate, 6,800,752 tons; triple superphosphate, 618,810 tons; total, 7,419,562 tons. Total actual production for 1943–44 was 7,542,106 tons (basis 18 per cent). Estimated deductions of 360,000 tons (exports, TVA non-commercial production, and defluorinated superphosphate) from the total estimated production for 1944–45 leaves 7,059,562 tons available for fertilizers. Requirements for mixed goods are estimated at 5,250,000 tons and for direct commercial ap-

plication at 1,000,000 tons, leaving 809,562 tons for other fertilizer uses. Estimated production of 1,800,000 tons during the fourth quarter is subject to availability of sulphuric acid and phosphate rock.

Shipments of phosphate rock from Florida have been curtailed during May by shortages of box cars. The railroads have indicated that improvement can hardly be expected in less than 30–60 days, and estimate that 60 to 70 per cent of needed cars will be available during the next six weeks. Unless this situation is remedied a loss of 200,000 tons from estimated June production is indicated. Such lost production cannot be made up at a later date. The subcommittee recommended that every effort be made to remedy this condition in May and June.

WFA reported that it was working with ODT and the Association of American Railroads to get additional cars for phosphate rock. The feasibility of obtaining water transportation was discussed. It was pointed out that most vessels that might become available would probably be large vessels, of the 10,000-ton class, and that such vessels could be utilized by only a limited number of superphosphate manufacturers. It was suggested that efforts be made to obtain smaller vessels, say of 5,000–6,000 tons. WFA stated that it would take up the matter of water transportation with appropriate Government agencies.

Report of Fertilizer Subcommittee

The subcommittee reported that WFA had made claim for 800,000 tons N, 1,850,000 tons P_2O_5, and 800,000 tons K_2O for fertilizers for 1945–46, and agreed as a whole that these figures were reasonably close to requirements. (Note: The quantities expected to be available to fertilizer manufacturers during the entire 1944–45 year are: 680,000 tons N, 1,270,721 tons P_2O_5, and 714,325 tons K_2O.) The subcommittee agreed that nitrogen supplies for 1945–46 may possibly reach the 800,000 tons claimed. Pointing out that the current estimate for 1945–46 indicates a slight increase of total potash for agriculture over 1944–45, the subcommittee called attention, however, to the prospective decrease in sulphate of potash supplies and recommended that sulphate of potash be made available to agriculture in quantities 33— per cent greater than the quantity available this year, such increase to be provided if possible without reducing the supply of muriate now estimated to be available from domestic sources. Attention was directed to the shortage of railroad cars for transporting phosphate rock, and the use of ships or barges for coastwise movement was recommended. The importance of early movement of fertilizer to the farm during the coming year was emphasized, and it was suggested that proper publicity be directed to facilitating the early movement program, except on the Pacific Coast. The Committee concurred in these recommendations.

The subcommittee reported that if grade restrictions are to be continued during 1945–46, some form of War Food fertilizer order seems necessary, but it was thought that the present WFO 5 can be simplified to considerable extent. WFA pointed out that the order may be revoked at any time if conditions make revocation desirable. Discussion developed the thought that in most States grade restriction would aid materially in getting out the fertilizer to the farms in time for use. It seemed to be the consensus of the Committee that WFO 5 should be continued in effect, with grade restrictions included but with elimination of some provisions not now needed. The changes in WFO 5 recommended by the subcommittee were presented, including elimination of (1) restrictions on package size (in Section 1206.1); (2) provisions for fixing the maximum rate of application per acre (Sections 1206.3 and 1206.12(d)); (3) provisions as to maximum requirements (Section 1206.4); (4) the requirements for obtaining from purchasers applications or purchase orders (Section 1206.5 (a) and in Section 1206.9); (5) Section 1206.6 relative to victory garden fertilizers; (6) Section 1206.7 relative to fertilizer for non-food use. It was reported also that it was not expected that substantial changes would be made in the lists of approved grades as they now appear in WFO 5.

OPA reported that there had been no important developments as to maximum prices since the meeting of February 15th.

No date was announced for the next meeting of the Committee, but a meeting may be called as necessity may arise.

THE SOIL PUTS ITS MARK ON MANKIND

(Continued from page 9)

Animals Need Extra Elements

The mineral content of vegetation varies greatly in accordance with the chemical nature of the soil on which it was grown. If a soil is high in available calcium, phosphorus, iodine, and cobalt, for example, so will the ash of the vegetation growing on it tend to be high in these elements. Soils not so well supplied with these elements may produce plants containing a preponderance of less essential elements, or possibly of poisonous ones instead.

Although most of the elements required by plants are needed also by animals, there are certain exceptions. For example, sodium chloride is required by animals but potassium chloride is fed to plants. It is conceivable that some of our local livestock troubles are caused by inadequate supplies of cobalt, a deficiency of which in the soil is never revealed by any lack of vigor on the part of crop plants

In general, the more productive a soil is naturally, the more likely it is that the crops that are grown on it will contain adequate amounts of most of the mineral elements animals need. Thus the produce of semi-arid regions is likely to contain higher percentages of the mineral elements and a greater variety of them than that of humid regions. Nebuchadnezzar ate grass from such a soil, with the result that his hair grew "like eagles' feathers" and his nails "like birds' claws." It may be well to add, however, that these semi-arid soils sometimes contain excessive amounts of highly poisonous elements, of which the selenium of Wyoming and fluorine of Arizona are good examples.

Minerals Added to Feeds

More and more elements are being added to the fertilizer mixtures that are being used on the land. But iodine, not being needed by plants, is omitted from fertilizers and supplied by way of food and feed. Similarly, cobalt is being fed to livestock in some areas. But even those elements that are essential to plants and, for that reason, are being applied to the soil are also being fed directly to animals as well. Thus pulverized limestone and bonemeal are commonly added to feeds for dairy cows and manganese sulphate to those for poultry. The question arises, why not add all the necessary mineral elements to the food and feed and consider plants merely as sources of carbohydrates, fats, proteins, and vitamins? Those who sell lime and fertilizers may object to this concept because it interferes with important sales arguments. They advertise the necessity of feeding minerals to animals and man by way of the fertilizer bag, the soil, and the plant.

Raising Yield Improves Quality

This highly important subject is now being carefully explored from many angles. Meanwhile consumers are concerned that those who produce the food they eat feed it liberally with lime and phosphate, at least, and possibly with some of the minor elements as well. They are interested in having farmers grow higher acre yields by whatever means this can be accomplished. For the higher the yield of a given crop, the better its mineral quality is likely to be.

Notwithstanding the increasing intensity of our agriculture and the growing number of cases of nutrient deficiencies in both soils and plants, human life expectancy is lengthening. One explanation for this may lie in the ever-increasing diversity of our diet resulting from improvement in the means of transportation of foodstuffs from distant points. Thus the whole earth becomes our breadbasket, and any deficiency of the produce from one soil is ironed out by the abundance in the produce from another. It would seem, however, that we should be able to develop a more exact method of control of the mineral content of the diet of both animals and man than that now in effect. As to whether this will be by way of the soil or the salt shaker remains to be determined.

Chemists of a southern citrus commission are reported to have produced from the tangerine a syrup rich in sugar and vitamins, with honeylike, sweet, fruity taste.

BUYERS' GUIDE • A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"

This list contains representative concerns in the Commercial Fertilizer Industry, including fertilizer manufacturers, machinery and equipment manufacturers, dealers in and manufacturers of commercial fertilizer materials and supplies, brokers, chemists, etc.
For Alphabetical List of Advertisers, see page 33.

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Barrett Division, The, Allied Chemical & Dye Corp., New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.
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BONE PRODUCTS
American Agricultural Chemical Co., New York City.
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Nitrogen Products, Inc., New York City
Phosphate Mining Co., The, New York City.

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